WHAT IS CLAIMED IS:

1. A method for machining an object, comprising:

providing an electronically controlled boring machine, a member, and a boring tool including a boring tool body and a cutting tool moveably coupled to the boring tool body;

coupling the boring tool to the boring machine;

placing a surface of the boring tool in contact with the member;

applying a force between the boring tool and the member sufficient to move the cutting tool relative to the boring tool body; and

machining the object after said applying.

2. The method of claim 1 wherein said machining is by rotating the boring tool about an axis, and wherein said applying includes sliding the cutting tool relative to the boring tool body in a direction perpendicular to the axis.

3. The method of claim 1 wherein the boring machine includes a translatable table and a translatable driving element, and said applying is by moving one of the table or the driving element relative to the other.

4. The method of claim 1 wherein said providing includes the object and the object includes the static member.

5. A method for adjusting a boring tool including a cutting tool with first and second surfaces and laterally slidable on the boring tool within a range of positions, comprising:

providing a static member and a boring tool ;

placing a first surface of the boring tool in contact with the static member;

sliding the cutting tool relative to the boring tool in a first direction to a first position by pressing together the first surface of the boring tool and the static member;

placing a second surface of the boring tool in contact with the static member; and

sliding the cutting tool relative to the boring tool in a second direction to a second position by pressing together the second surface of the boring tool against the static member, the second direction being opposite to the first direction.

6. The method of claim 5 which further comprises clamping the cutting tool to the boring tool and maintaining said clamping during said sliding in the first direction.

7. The method of claim 6 which further comprises maintaining said clamping during said sliding in the second direction.

8. The method of claim 7 wherein said providing includes an object which further comprises machining a feature on the object while maintaining said clamping.

9. The method of claim 5 wherein said providing includes a boring machine and which further comprises coupling the boring tool to the boring machine before said placing.

10. A method for machining an object, comprising:

providing boring machine and a boring tool including an adjustable cutting tool laterally slidable within a range of positions on the boring tool;

coupling the boring tool to the boring machine;

clamping the slidable cutting tool to the boring tool; and

adjusting the lateral position of the cutting tool while maintaining said coupling and maintaining said clamping.

11. The method of claim 10 which further comprises machining the object with the cutting tool after said adjusting while maintaining said coupling and maintaining said clamping.

12. The method of claim 10 wherein said adjusting is by pressing a surface of the boring tool against a surface.

13. The method of claim 10 wherein said clamping establishes a frictional force resisting lateral sliding of the cutting tool on the boring tool, and said adjusting is by applying a lateral force sufficient to overcome the frictional force.

14. A method comprising:

providing an object, a CNC boring machine, a cutting tool, and a cutting tool holder slidably adjustable within a range of positions;

machining a feature in the object by the CNC boring machine with the cutting tool;

measuring a characteristic of the feature;

calculating an amount to adjust the position of the cutting tool; and

automatically adjusting the position of the cutting tool with the aid of the CNC boring machine to slide the cutting tool holder by a distance corresponding to the calculated amount.

15. The method of claim 14 wherein said machining a feature is boring a hole and said measuring a characteristic is measuring the diameter of the hole.

16. The method of claim 14 wherein said providing includes a surface of a member, and the computer commands a pressing of a surface of the cutting tool holder against the surface of the member to slide the cutting tool.

17. A system for boring a hole, comprising:

a computer numerically controlled machining apparatus having a rotating drive member rotatable about an axis;

a member with a first surface, the member being proximate said machining apparatus;

a boring tool including a coupling member for coupling said boring tool to said drive member and a cutting tool holder slidably coupled to said boring tool, said tool holder being slidable relative to said drive member in a direction at least partly perpendicular to the axis, said tool holder having a second surface; and

an electronic controller operably coupled to said machine, said controller performing an algorithm which adjusts the sliding position of said cutting tool holder by placing the first surface in contact with the second surface and applying a force thereacross.

18. The system of claim 17 wherein said machining apparatus is a boring machine

19. The system of claim 17 wherein said electronic controller is a computer with a memory and said algorithm is a software program.

20. The system of claim 17 wherein said controller applies the force by pressing the first surface against the second surface.

21. An apparatus for boring a hole with a cutting tool and a boring machine, comprising:

an adjustable position tool holder having a first contact surface and including a cutting tool;

a coupling element for coupling said tool holder to the boring machine, said coupling element being slidably coupled to said tool holder and having a second contact surface in sliding contact with the first contact surface, said tool holder being adjustable laterally within a range of positions relative to the coupling element; and

means for applying a frictional force between the first and second contact surfaces which is sufficient to restrain the lateral position of the tool holder when the cutting tool is boring a hole, but which frictional force is insufficient to restrain the lateral position of the tool holder when the lateral position of the tool holder is adjusted.

22. The apparatus of claim 21 wherein said applying means does not include a set screw.

23. The apparatus of claim 21 wherein said applying means includes an electromagnetic solenoid.

24. The apparatus of claim 21 wherein said applying means includes a hydraulic piston.

25. The apparatus of claim 21 wherein said applying means is hydraulically actuated.

26. The apparatus of claim 21 wherein said applying means is electrically actuated.

27. The apparatus of claim 21 wherein said applying means includes a spring.

28. The apparatus of claim 21 wherein said applying means is centrifugally actuated.

29. The apparatus of claim 21 which further comprises coating one of the first contact surface or the second contact surface to modify the friction therebetween.

30. An apparatus for machining a hole with a boring machine, comprising:

an adjustable position tool holder having a first contact surface and including a replaceable cutting tool;

a coupling element for coupling said tool holder to the boring machine, the coupling element having a second contact surface in sliding contact with the first contact surface and slidable in a linear direction, said tool holder being adjustable over a range of positions in the linear direction relative to said coupling element for machining a hole within a corresponding range of dimensions; and

a spring urging the first contact surface against the second contact surface to increase the friction between the first contact surface and the second contact surface.

31. The apparatus of claim 30 wherein said spring has a first position for urging the first contact surface against the second contact surface with a first force, and a second position

for urging the first contact surface against the second contact surface with a second force greater than the first force.

32. The apparatus of claim 30 wherein at least one of the first contact surface or the second contact surface includes thereon a surface coating for modifying the friction between the first contact surface and the second contact surface.

33. The apparatus of claim 30 wherein said tool holder is adapted and configured to rotate along an axis, and the axis is perpendicular to the linear direction of adjustment.

34. The apparatus of claim 30 wherein the linear direction is a first linear direction, and said spring urges the first contact surface against the second contact surface in a second linear direction perpendicular to the first linear direction.

35. A method for supporting a cutting tool for boring holes, comprising:

providing an adjustable position cutting tool holder and a coupling member with a first end for coupling to a rotational drive unit of a boring machine and a second end slidably supporting the cutting-tool holder, the cutting tool holder being slidably adjustable relative to the coupling member in a direction and being restrained by friction from sliding relative to the coupling member in the direction;

providing a friction force actuating mechanism for varying the restraining friction force between the cutting tool holder and the coupling member, the mechanism being actuatable between a first state and a second state;

actuating the mechanism to a first state and applying a first friction force between the cutting tool holder and the coupling member; and

actuating the mechanism to a second state and applying a second friction force between the cutting tool holder and the coupling member, the second friction force being greater than the first friction force.

36. The method of claim 35 wherein the friction force actuating mechanism includes an electromagnetic solenoid.

37. The method of claim 35 wherein the friction force actuating mechanism includes a hydraulic piston.

38. The method of claim 35 wherein the friction force actuating mechanism is hydraulically actuated.

39. The method of claim 35 wherein the friction force actuating mechanism is electrically actuated.

40. The method of claim 35 wherein the friction force actuating mechanism includes a spring.

41. The method of claim 35 wherein the friction force actuating mechanism is centrifugally actuated.

42. An apparatus for machining a feature with a boring machine, comprising:

an adjustable position tool holder including a cutting tool;

a coupling element for coupling said tool holder to the boring machine, said coupling element being slidably coupled to said tool holder, said tool holder being adjustable within a range of positions relative to said coupling element for machining a corresponding range of features, said cutting tool holder being slidably adjustable relative to said coupling member in a direction and being restrained by friction from sliding relative to said coupling member in the direction; and

means for automatically actuating a variable frictional force between said cutting tool holder and said coupling member.

43 The apparatus of claim 42 wherein said automatic actuating means includes a cam pivotally coupled to said coupling element and a spring compressed by said cam.

44. The apparatus of claim 43 which further comprises an electromagnetic solenoid coupled to said cam, said cam pivoting in response to energizing said solenoid.

45. The apparatus of claim 35 wherein said actuating to a first state is by urging apart the cutting tool holder from the coupling member, and said actuating to a second state is by urging apart the cutting tool holder from the coupling member.

46. The apparatus of claim 35 wherein said actuating to a first state is by urging together the cutting tool holder and the coupling member, said actuating to a second state is by urging together the cutting tool holder and the coupling member.

47. A method for machining a feature in an object, comprising:

providing a boring machine, a member with a first surface, and a boring tool including a cutting tool and a slidably moveable cutting tool holder with a second surface;

coupling the boring tool to the boring machine;

placing the second surface of the tool holder in contact with the first surface of the member;

pressing the second surface against the first surface;

sliding the cutting tool relative to the boring tool by said pressing; and

machining the object during said sliding.

48. The method of claim 47 which further comprises contouring the first surface to correspond to the contour of the sidewall of the hole.

49. The method of claim 47 which further comprises contouring the second surface to correspond to the contour of the sidewall of the hole.

50. The method of claim 47 which further comprises advancing the boring tool toward the object, wherein said pressing is during said advancing.

51. A system for boring a hole with contoured sidewalls in an object, comprising:

a boring tool including a coupling member and a cutting tool holder slidably coupled to said boring tool, said tool holder being slidable relative to said coupling member, said tool holder having a first surface shaped in a contour corresponding to the contour of the sidewalls of the hole;

a computer numerically controlled machining apparatus including a table for mounting the object, said machining apparatus having a rotating drive member receiving said coupling member and being rotatable about an axis, whereby said machining apparatus moves said boring tool in a direction parallel to the axis during the boring; and

a static member with a second surface, the second surface being in contact with the first surface during at least some of the boring, said static member being fixedly mounted to one of said machining apparatus, said table, or the object.

52. The system of claim 51 wherein said static member includes an antifriction bearing element in contact with said boring tool.

53. The system of claim 51 wherein the contour of the first surface corresponds to a conical sidewall of the hole.

54. The system of claim 51 which further comprises means for automatically actuating a variable frictional force between said cutting tool holder and said coupling member.

55. A system for boring a hole with contoured sidewalls in an object, comprising:

a boring tool including a coupling member and a cutting tool holder slidably coupled to said boring tool, said tool holder being slidable relative to said coupling member, said tool holder having a first external surface;

a computer numerically controlled machining apparatus including a table for mounting the object, said machining apparatus having a rotating drive member receiving said coupling member and being rotatable about an axis, whereby said machining apparatus moves said boring tool in a direction parallel to the axis during the boring; and

a static member with a second surface, the second surface being shaped in a contour corresponding to the contour of the sidewalls of the hole, said static member being fixedly mounted to one of said machining apparatus, said table, or the workpiece;

wherein the second surface is in contact with the first surface during at least some of the boring.

56. The system of claim 55 wherein the static member includes a ring-shaped portion which surrounds a portion of said boring tool.

57. The system of claim 55 wherein said tool holder includes an antifriction bearing element in contact with said static member.

58. The system of claim 55 wherein the contour of the second surface corresponds to a conical sidewall of the hole.

59. The system of claim 55 which further comprises means for automatically actuating a variable frictional force between said cutting tool holder and said coupling member.

60. An apparatus for machining a feature with a boring machine, comprising:

an adjustable position tool holder having a contact surface and including a replaceable cutting tool;

a coupling element for coupling the tool holder to the boring machine, said tool holder being slidable in a direction relative to said coupling element, said tool holder being adjustable over a range of positions in the direction relative to said coupling element for machining a hole within a range of dimensions that correspond to the range of positions; and

a biasing member applying a force against the contact surface to increase a frictional force on the contact surface that restrains movement of said tool holder relative to said coupling element in the direction of sliding.

61. The apparatus of claim 60 wherein the contact surface is a first contact surface, and which further comprises a movable member, said movable member having a second contact surface, said biasing member urging the first contact surface against the second contact surface.

62. The apparatus of claim 61 wherein at least one of the first contact surface or the second contact surface includes a coating to control the friction between the first contact surface and the second contact surface.

63. The apparatus of claim 60 wherein said biasing member is a spring having a length, said coupling member defines a pocket for holding said spring, the pocket having a depth, and the length is greater than the depth.

64. An apparatus for machining a feature with a boring machine, comprising:

an adjustable position tool holder having a contact surface and including a cutting tool:

a coupling element for coupling the tool holder to a boring machine, said tool holder being slidably adjustable over a range of positions in a first direction relative to said coupling element for machining a feature within a range of dimensions that correspond to the range of positions;

a movable member within said coupling element and movable in a second direction at least partly orthogonal to said first direction, said movable member being substantially restrained from motion in the first direction; and

a biasing member applying a force at least partly in the second direction against said movable member.

65. An apparatus for machining a feature with a boring machine, comprising:

an adjustable position tool holder having a contact surface and including a cutting tool;

a coupling element for coupling the tool holder to a boring machine, said tool holder being slidably adjustable over a range of positions in a first direction relative to said coupling element for machining a feature within a range of dimensions that correspond to the range of positions;

a movable member guided within said coupling element and movable within said coupling element ; and

a biasing member applying a force against said movable member;

wherein said biasing member and said movable member are adapted and configured such that the force from said biasing member urges said movable member in the first direction and urges said movable member in a second direction at least partly orthogonal to the first direction.

66. A method for retaining a cutting tool for boring holes, comprising:

providing a cutting tool, a slidably adjustable cutting tool holder slidable in a first direction, and a movable member movable in a second direction, the second direction being at least partly orthogonal to the first direction;

restraining the movement of the tool holder along the second direction;

biasing the tool holder along the second direction;

restraining the movement of the movable member along the first direction; and

biasing the movable member along the first direction.

67. The apparatus of claim 66 wherein said biasing the tool holder is by an electromagnetic solenoid.

68. The apparatus of claim 66 wherein said biasing the tool holder is by a hydraulic piston.

69. The apparatus of claim 66 wherein said biasing the tool holder is by at least one of hydraulic or pneumatic actuation.

70. The apparatus of claim 66 wherein said biasing the tool holder is by electrical actuation.

71. The apparatus of claim 66 wherein said biasing the tool holder is by a spring.

72. The apparatus of claim 66 wherein said biasing the tool holder is by centrifugal actuation.

73. A method for retaining a cutting tool for boring holes, comprising:

providing a cutting tool and a tool holder slidable along a first direction and at least partially restrained from movement along a second direction orthogonal to the first direction;

providing a movable member movable along the second direction and at least partially restrained from movement along the first direction;

biasing the tool holder and the movable member along the second direction; and

restraining the movement of the tool holder along the first direction by friction between the boring tool and the movable member

74. The apparatus of claim 73 wherein said biasing the tool holder and the movable member is by an electromagnetic solenoid.

75. The apparatus of claim 73 wherein said biasing the tool holder and the movable member is by a hydraulic piston.

76. The apparatus of claim 73 wherein said biasing the tool holder and the movable member is by at least one of hydraulic or pneumatic actuation.

77. The apparatus of claim 73 wherein said biasing the tool holder and the movable member is by electrical actuation.

78. The apparatus of claim 73 wherein said biasing the tool holder and the movable member is by a spring.

79. The apparatus of claim 73 wherein said biasing the tool holder and the movable member is by centrifugal actuation.